Remarks

Entry of the above amendments and below remarks is respectfully requested. Claims 1-35 have been cancelled by this amendment. Claims 36-61 have been added. Applicant's amendments to the claims have been performed only for the purposes of correcting claim form, rather than claim substance. The amendments to the claims were not made in view of the prior art cited by the Examiner, which fails to suggest or describe limitations of the claims as described in more detail below.

Objections to the Specification

The specification was objected to for various informalities. Applicants have amended the specification to correct the cited informality among others. In view of the amendments, it is respectfully requested that the objection be withdrawn.

Objections to the Claims

The claims were objected to for various informalities, and for improper format. Applicants have provided herewith a replacement set of claims which clearly recite the features of the present invention and are now in proper form. In view of these amendments, it is respectfully requested that the objection be withdrawn.

Rejections to the Claims

Claims 1-5, 7-14, 16-18 and 20-35 were rejected under 35 U.S.C. §102(b) as being anticipated by Seidel (U.S. Patent Number 4,383,316). Claims 6, 15 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Seidel in view of what is obvious in the art.

The Examiner stated, at page 10 of the Office Action:

"It is the Examiner's position that the claimed invention does not distinguish over the prior art used in the above rejection. The independent claims 1 and 10 include a source node streaming data through multiple channels in a two-link path, which is well known in the art. Independent claims 20 and 28 include a plurality of source nodes with the same functionality. Seidel discloses a method and apparatus for transmitting a data signal by streaming data segments across a multiplicity of channels, the channels across different paths, in order to produce a high-speed data signal over a network. Therefore, Seidel teaches the functionality of the claimed invention and the Applicant should submit amendments to the claims in order to distinguish over the prior art"

As noted above, Applicants have amended the claims to correct form. Applicants below remarks are provided to aid the Examiner in distinguishing the claimed invention from Seidel.

Seidel, U.S. Patent Number 4,383,316

Seidel describes a system wherein "Digital carrier channels and switching systems in a telecommunications facility may be used to transmit a high-speed data signal between an originating end and a terminating end. At the originating end, the high-speed data signal is distributed either bit-by-bit or sample-by-sample and sequentially to a predetermined plurality of lower speed channels." (Seidel, Abstract) Please see Seidel's first claim: "A digital transmission system arranged for transmission of a high-speed serial data stream between an originating end (11) and a terminating end (29) separated geographically ...."

Seidel disclosed only a method of dividing a *single* data stream among a number of channels from an originating end to a *single* terminating end. The single data stream has a flow rate (bits-per-second for example) exceeding the capacity of a single channel (in bits-per-second for example). Seidel uses a conventional technique known as 'striping' for

selecting output channels. However, the channels used are telephone connections (64 kilobits per second each) that may be routed differently over paths that may have significantly different propagation delays. The invention of Seidel provides means for collating the data at the terminating end. As summarized by Seidel: "In accordance with the illustrative embodiment of the present invention, a system is arranged for the transmission of a high-speed serial data stream between an originating end and a terminating end by distributing the high-speed serial data stream either bit-by-bit or sample-by-sample, sequentially, to a predetermined plurality of lower-speed channels." (Seidel, Summary)

In contrast to Seidel, the present invention enables numerous data streams (not just a single data stream) transmitted from a source node to share a link having multiple channels. Unlike Seidel, the data streams may have different destinations and different flow rates. The present invention distributes individual data streams equitably over the channels by controlling distribution at the source node, helping to prevent data loss as the multiple streams disperse over different paths to their destinations. In addition, in the present invention, if the shared multi-channel link is connecting to a core node offering partial connectivity, for example a core node comprising parallel switching planes, then the source node provides equitable assignment of each data stream individually over the multiple channels. Because the data streams are may be randomly interleaved, the process of individual equitable distribution is not trivial.

Applicants submit that Seidel would not be motivated to provide either the feature of rate regulation for each data stream individually or the feature of spatial distribution of individual data streams because in the system considered there is *only one stream* and there is only one terminating end.

Applicant notes that the data stream of Seidel comprises a concatenation of messages. However, because the concatenated messages have the same destination, they are correctly treated by Seidel as a single stream.

The above distinguishing features are recited in several of Applicants' claims. . For example, claim 36 and the other independent claims recite the functions of "...assigning to said particular data stream a current output channel from among a plurality of output channels, said current output channel being selected to provide *equitable distribution of said particular data stream* across the plurality of output channels; "

The other independent claims of the present invention now include limitations similar to that of claim 36. For example, claim 43 recites "...A source node comprising: a plurality of input ports, a plurality of output ports; a payload memory device ...a first memory device logically partitioned into primary queues ...a second memory device logically partitioned into secondary queues ... a first controller for regulating transfer of selected addresses from said primary queues to said second memory device; *and a second controller for equitably distributing said selected addresses among selected secondary queues...*"

Independent claim 52 recites "...A network comprising ... a plurality of source nodes; a first plurality of cross connectors a plurality of core nodes; a second plurality of cross connectors; a plurality of sink nodes; and a plurality of multi-channel links ... and wherein each of said source nodes sends data streams to at least one of said sink nodes and regulates the bit rate of each of said data streams; and *wherein each of said source nodes divides data of each of said data streams equitably among channels of a selected multi-channel path.*".

Independent claim 58 recites "...A source node having a plurality of multi-channel links connecting to core nodes in a network, each of said links comprising a respective

plurality of channels, said source node operable to ... retain, in a control table, an identifier of a last-used channel in each of said multi-channel links for each data stream from among a plurality of data streams originating from said source node; receive a data unit belonging to a particular data stream from among said data streams; select a particular multi-channel link from among said plurality of multi-channel links *according to a desired distribution of data streams over the plurality of multi-channel links* ..."

Accordingly, because Seidel fails to disclose or suggest *every* limitation of the claims, the newly added claims of the present invention are patentably distinct over Seidel under 35 U.S.C. §102 and 35 U.S.C. §103.

Conclusion

Applicants have made a diligent effort to place the claims in condition for allowance. However, should there remain unresolved issues that require adverse action, it is respectfully requested that the Examiner telephone Lindsay G. McGuinness, Applicants' Attorney at 978-264-6664 extension 304 so that such issues may be resolved as expeditiously as possible.

For these reasons, and in view of the above amendments, this application is now considered to be in condition for allowance and such action is earnestly solicited.

Respectfully submitted,

Lindsay G. McGuinness
Registration number 38,549
Attorney for Applicant
978-264-6664 x 304

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